Interagency Ecological Program 2023 Work Plan Element Spatio-Temporal Community Patterns for Early Life Stages of Fishes and their Associations with Zooplankton in the Upper San Francisco Estuary

Project Manager and Affiliation

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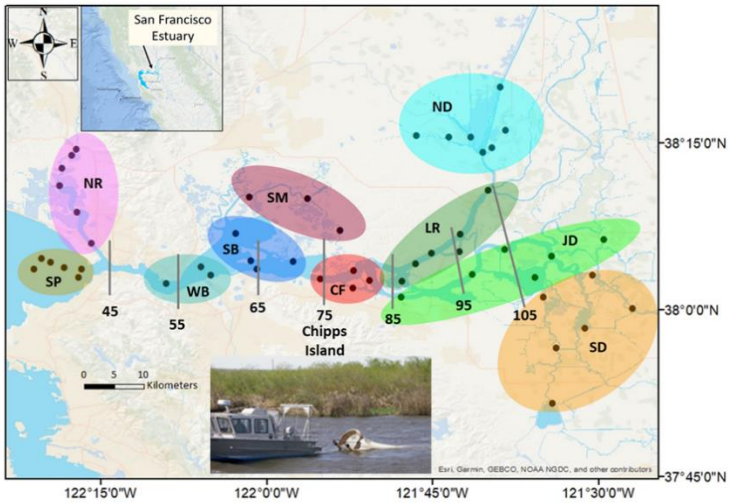
Annual Costs (thousands) and Funding Sources

$ 60 USBR



The Upper San Francisco Estuary showing 20-mm Survey stations (dots) across 10 areas from west to east: San Pablo Bay (SP), Napa River (NR), West Suisun Bay (WB), Grizzly-Honker-Suisun bays (SB), Suisun Marsh (SM), Confluence (CF), Lower San Joaquin River-Central Delta (JD), Lower Sacramento River (LR), North Delta (ND), and South Delta (SD)

Description

This study will advance the understanding on spatial and temporal community patterns and trends for the larval-juvenile fishes and zooplankton in the upper San Francisco Estuary. It will also contribute to evaluate the influence of hydrological conditions on the distribution and abundance of fishes and the trophic associations between fish and zooplankton. To accomplish this, the study will primarily make use of the long-term (1995-2017) CDFW 20-mm Survey data. Covariates derived from other IEP programs will also be considered to evaluate their influence on fish and zooplankton communities.

Need

This study will improve utilization of existing data by taking advantage of the CDFW 20-mm Survey, the most extensive long-term monitoring designed for Delta Smelt. The study will involve collaboration with the CDFW staff implementing this survey and other collaborators. Results from this study will contribute to fill the knowledge gap between populations and ecosystems. Results are expected to inform habitat restoration, conservation, and management of the Upper San Francisco Estuary.

Objectives

1. Describe the fish community and its responses to environmental variation across years and areas (manuscript available)
2. Evaluate community response to environmental and spatial- temporal gradients (manuscript available)
3. Evaluate the hydrodynamic influence on selected species of fish
4. Describe the zooplankton community and its response to environmental variation across years and areas
5. Examine whether survival of Delta Smelt and Longfin Smelt are potentially associated to zooplankton abundance

Schedule of Milestones

- Sept 2022 – Manuscript (objective 3)
- Feb-April 2023 – IEP Workshop presentation (objective 5)
- Dec 2023 – Manuscript (objective 5)
- Feb-April 2024 – IEP Workshop presentation (objective 4)
- Dec 2024 – Manuscript (objective 4)